PROPOSED ACTION MEMORANDUM FOR THE DECOMMISSIONING OF BUILDING 123

Rocky Mountain Remediation Services, L.L.C.

~~November 12, 1997~~ March 26, 1998

Revision 6 ~~5~~

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ATTACHMENTS

ACRONYMS

ACM	Asbestos-containing material
ALARA	As low as reasonably achievable
AQM	Air Quality Management
AHERA	Asbestos Hazard Emergency Response Act
ARAR	Applicable or Relevant and Appropriate Requirements
BRCS	Building Radiation Cleanup Standard
CAQCC	Colorado Air Quality Control Commission
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and the Environment
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHWA	Colorado Hazardous Waste Act
COC	contaminants of concern
CWTF	Consolidated Water Treatment Facility
D&D	Decommissioning and Demolition
DDCP	dibutyl-n-n-diethyl carbamoyl phosphonate
DoD	Department of Defense
DOE	Department of Energy
ED	External Dosimetry
FIP	Facility Implementation Plan
GSA	General Services Administration
HPGe	high-purity germanium
HPI	Health Physics Instrumentation
HRR	Historical Release Report
HSP	Health and Safety Plan
HUD	US Department of Housing and Urban Development
HVAC	heating, ventilating and air conditioning
IH	Industrial Hygiene
IHSS	Individual Hazardous Substance Site
IRA	Interim Remedial Action
IWCP	Industrial Work Control Plan
LLM	low-level mixed waste
LLW	low-level waste
MARSSIM	Multi-Agency Radiological Site Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
mrem	millirem
NCP	National Contingency Plan

NEPA	National Environmental Protection Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
OPWL	Original Process Waste Line
OSHA	Occupational Safety and Health Administration
PAM	Proposed Action Memorandum
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PU&D	Property Utilization and Disposal
QA/QC	Quality Assurance/Quality Control
RAAMP	Radioactive Ambient Air Monitoring Program
RCA	Radiation Control Area
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RLCR	Reconnaissance-Level Characterization Report
RLCS	Reconnaissance-Level Characterization Survey
RMMA	Radioactive Material Management Area
RMRS	Rocky Mountain Remediation Services
RWP	Radiation Work Permit
SAA	Satellite Accumulation Area
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments Reauthorization Act
SHPO	State Historic Preservation Office
TAL	Target Analyte List
TBC	to-be-considered
TCLP	Toxicity Characteristic Leaching Procedure
TLD	thermoluminescent dosimeter
TSCA	Toxic Substance Control Act
TSDF	treatment, storage, and disposal facility
TU	Temporary Unit
UBC	Underground Building Contamination
VOC	volatile organic compound
WMP	Waste Management Plan
WSRIC	Waste Stream Residue Identification Characterization

1.0 PURPOSE

This Proposed Action Memorandum (PAM) outlines the approach and the applicable requirements that will be utilized in the decommissioning of Buildings 123, 114, 113, and 123S as part of the site cleanup of the Rocky Flats Environmental Technology Site (RFETS). The effort will be managed as a non-time critical Interim Remedial Action (IRA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), with respect to the RFETS Life Cycle Baseline (DOE 1996a).

Removal of the subject buildings will be conducted in accordance with the Rocky Flats Cleanup Agreement (RFCA, DOE 1996b) and the applicable or relevant and appropriate requirements (ARARs) of Federal, State, and local regulations. The regulatory requirements are implemented through RFETS policies and procedures. The action will be conducted in a manner that is protective of site workers, the public, and the environment.

2.0 PROJECT DESCRIPTION

The project will facilitate the decommissioning efforts at Buildings 123, 113, 114, and 123S; ~~remediation~~ characterization of Individual Hazardous Substance Sites (IHSS) 121 and 148; partial closure of Resource Conservation and Recovery Act (RCRA) Unit 40; and decontamination of radiologically-contaminated facility systems. Any subsurface contamination identified during the course of the project will be evaluated by ER subsequent to removal of Building 123 and is not considered to be part of the scope of this project. ~~The Building 123 slab and foundation will be removed as required to remediate any subsurface contamination as dictated by soil sampling results.~~ The PAM will thoroughly examine building removal activities, including relocation of the building tenants; removal of furniture, equipment, and excess chemicals; characterization of the building hazards and potential contamination; and removal of all asbestos-containing material (ACM).

2.1 BUILDING 123 PHYSICAL DESCRIPTION

The main structure in the 123 Cluster is Building 123, a bioassay laboratory and a dosimetry counting and distribution facility. Associated structures include Building 113, a medical records storage facility (which originally served as a guard shack); Building 114, a small outdoor shelter; and Building 123S, a metal storage unit for containerized waste. Building locations are indicated in Figure 2-1. This section describes the physical arrangement of principal buildings in the Building 123 Area, including architectural and structural features, significant equipment, environmental control systems and safety aspects of each building.

Building 123 is located on Central Avenue between Third and Fourth Streets (Figure 2-1).

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Figure 2-2 indicates the location of the building in relation to other RFETS facilities. The original building has been in use since construction in 1953, with additions completed in 1968, 1972, and 1974. The general areas of the building and respective approximate construction dates are:

East and North Wing (Rooms 100-135) - 1952
Addition to East Wing (Rooms 139-151) - 1968

Figure 2-1 Building 123 Site Plan

Figure 2-2 Building 123 Site Location

West Wing (Rooms 154-163) - 1972
Addition to East Wing (Room 165) - 1974

Currently, the 75-room, single-level facility covers approximately 19,000 square feet and is constructed on grade with approximately fourteen- (14-) foot ceilings. Construction material is mostly concrete with an asphalt roof. Modifications have been made to the building interior after the original construction of each area. Areas have been remodeled including installation and removal and partition walls, laboratory fixtures and other items. Sections of piping have been installed, removed and modified during the life of the facility. In addition, piping insulation in some areas has been replaced. Therefore, the possibility exists for a specific system, room or area to contain both ACM and non-ACM.

Heating, ventilating, and air conditioning (HVAC); electricity; gas and compressed air; steam; water; process waste; sewer; fuel oil; and fire protection utility systems serve the building.

2.2 123 CLUSTER GENERAL OPERATING HISTORY

2.2.1 Building 123

Building 123 was one of the first ten (10) buildings constructed at Rocky Flats. Analytical laboratory, dosimetry and instrument calibration activities have been conducted in Building 123 since construction in 1953. Building 123 also provides office space for radiation health specialists; storage for all radiological health records; a laboratory for calibration and repair of criticality alarms and other repair/calibration shops. Building 123 once housed medical research until such operations were relocated to Building 122. The Building 123 floor plan is indicated in Figure 2-3.

Operation of the analytical laboratory generates approximately 95 percent of the building waste and stores the majority of hazardous chemicals, with minor contributions from External Dosimetry (ED) and Health Physics Instrumentation (HPI) Sections. Historically, standard utility services have also generated small amounts of waste.

The analytical laboratory analyzes environmental (air, water, soil, and vegetation); biological (urine, fecal material, and nose swipes); health physics (room air); and industrial hygiene samples (beryllium and organic vapors in room air). The HPI Section repairs and calibrates radiation-detection instruments. The ED Section processes thermoluminescent dosimeters (TLDs) and film badges. The Radiological Records Section maintains occupational radiation exposure and dose records for radiation workers.

The analytical laboratory procedures involve the digestion of samples to purify and concentrate the radiological constituents. Sample preparation operations generated the bulk of the building waste. Combustibles, rubber gloves, and broken glass generated in the Radioactive Materials Management Areas (RMMAs) were placed in accumulation areas for eventual handling and

removal as low-level waste (LLW). Various sample waste and rinse solutions were washed down the process drain for subsequent treatment in Building 774 (in Building 374 after 1983). Liquid organic wastes were containerized in special bottles and stored in satellite accumulation areas prior to transfer to the RCRA 90-day storage building and eventual shipment to Liquid Waste Operations.

Figure 2-3 Building 123 Floor Plan

RCRA-regulated wastes were also collected in Satellite Accumulation Areas (SAAs), located in Rooms 103A, 124, 125, 127, and 156. Wastes generated in non-RMMAs and monitorable lab trash were deposited in dumpsters for disposal in the RFETS landfill.

Hazardous chemicals associated with Building 123 operations included in Section 2.4.

During the past forty-four (44) years, building operations have resulted in varying degrees of radioactive and chemical contamination within the building. For example, interviews with Building 123 occupants indicate that in the late 1960's or early 1970's, a small amount of cesium-contaminated liquid was spilled on the concrete floor in Room 109C. The floor was sealed to immobilize the contamination. Leaks or spills have also potentially contaminated the soil adjacent to and beneath the building (Section 2.3.1 through 2.3.3).

2.2.2 Building 113

Building 113 is a guardhouse that has been converted to office space (Figure 2-1). The building is constructed of concrete with a flat roof, and is similar to four other guardhouses that have already been removed from RFETS. No internal processes were located in the building.

2.2.3 Building 114

Building 114 is a small shelter used by RFETS employees as a waiting area for offsite transportation (Figure 2-1). The building encloses about 25 square feet and is constructed of masonry blocks with a flat roof. No utilities are associated with the building, and records indicate that the building has served no other function.

2.2.4 Building 123S

Building 123S is a metal shed upon a concrete slab (Figure 2-1). The shed encloses approximately 60 square feet and was formerly managed as a RCRA 90-day storage area for organic wastes including toluene and dibutyl-n-n-diethyl carbamoyl phosphonate (DDCP) wastes produced in Building 123 laboratories. The facility was formally closed as part of the RCRA process in 1996. Closure followed 6 CCR 1007-3, 262.34(a) and 6 CCR 1007-3, 265.111 and 265.114 requirements. No waste or other material is currently stored in the shed. No utility hookups exist in the building.

2.3 RCRA-DESIGNATED AREAS AND INDIVIDUAL HAZARDOUS SUBSTANCE SITES (IHSS)

2.3.1 RCRA Unit 40

The Building 123 area encompasses a portion of RCRA Unit 40, the plant-wide process waste system, a network of tanks and underground and overhead pipelines constructed to transport

and temporarily store process wastes from point of origin to on-site treatment and discharge points. RCRA Unit 40 includes all overhead and underground and process waste lines in and around Building 123. No other RCRA unit exists in the Building 123 area.

2.3.2 IHSS 121

The Building 123 area includes CERCLA-designated IHSS 121. IHSS 121 consists of RCRA Unit 40 underground OPWLs P-1, P-2, and P-3, which constitute former Operable Unit No. 9 (OU9). The pipelines were designated in the *Final Phase I RCRA Facility Investigation/ Remedial Investigation (RFI/RI) Work Plan for Operable Unit 9* (DOE 1992a).

All process waste generated from 1952 to 1968 was transferred from Building 123 to Building 441 through line P-2, which ran below the west side of the east wing before exiting at the southeast corner of the building. In 1968 the southeast wing was extended about fifty (50) feet to the south. Prior to the building addition, two manholes (MH-2 and MH-3) were constructed and the line was extended south to MH-2, then east to MH-3, and north to MH-4, before assuming the original path to the east. The extension was designated as P-3. One manhole was abandoned and covered by the building addition. In 1972 a west wing was constructed, extending south from the northwest corner of the original building. Prior to construction of the wing, line P-1 was installed to transfer waste to manhole MH-1, then east to a junction with P-3 at MH-2 (Figure 2.1). The lines transferred the following process waste from Building 123:

Acids: nitric acid (HNO_3), hydrofluoric acid (HF), sulfuric acid (H_2SO_4), hydrochloric acid (HCl), acetic acid ($C_2H_4O_2$), and perchloric acid ($HClO_4$);
Bases: ammonium hydroxide (NH4OH) and sodium hydroxide (NaOH);
Solvents: acetone, alcohols, cyclohexane, toluene, xylenes, triisooctomine, and ether;
Radionuclides: various isotopes of plutonium (Pu), americium (Am), uranium (U), and curium (Cm);
Metals: beryllium (Be) (trace amounts); and
Others: ammonium thiocyanate, ethylene glycol, and possible trace amounts of polychlorinated biphenyls (PCBs).

In 1982 P-2 and P-3 were abandoned and plugged with cement. In 1989 the process waste transfer system was upgraded, including removal of the east-west section of P-1 between MH-2 and MH-3. The north-south section of P-1 between Building 123 and MH-1 was converted to the new process system. Three large, interconnected concrete sump pit areas were installed in Rooms 156, 157, and 158 to accommodate process waste system backup. Pipe was installed connecting MH-1 to Valve Vault 18 (Figure 2-1).

Currently, all process waste throughout Building 123 is collected in floor sumps. Each sump collects and temporarily stores liquid waste which is then pumped through overhead lines into a main floor sump in Room 158. The waste is then gravity-fed through P-1 to Valve Vault 18, then to Tank 428 at Building 441, and finally to Building 374 for treatment. Tank 428 will not

be removed as part of this action as the tank is needed to service other RFETS building waste systems.

2.3.3 IHSS 148

IHSS 148 is part of former Operable Unit No. 13 (OU13) and is located beneath Building 123. IHSS 148 was designated in the *Final Phase I RFI/RI Work Plan for Operable Unit 13* (DOE 1992b) and has been identified as Underground Building Contamination (UBC) 123 in the RFETS Historical Release Report (HRR, DOE 1992c). IHSS 148 was established as a result of reported small spills of nitrate-bearing wastes along the east side of the building. Potential leaks in OPWL P-2 may have created contaminated soil beneath the building. A detailed characterization was conducted from September 1993 to February 1995 as part of a Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI). The characterization included high-purity germanium (HPGe) surveys, vertical soil profiles, surface soil sampling and soil gas surveys.

Thirty-four (34) analytes were detected in the surface soil survey, including twenty-six (26) inorganic compounds and eight (8) radionuclides.

The soil-gas survey was conducted on a 25-foot grid in accordance with the work plan. Sixty-four (64) soil-gas locations were sampled during the survey. Thirteen (13) samples contained volatile organic compound (VOC) levels in excess of the 1 µg/ L method detection limit. Benzene, toluene, ethylbenzene, and xylene (BTEX) fuel constituents were detected in samples collected from the perimeter of Building 123 and within the west and east wings of the building. Trichlorofluoromethane (TCFM) was detected in nine samples distributed throughout the IHSS 148 area at levels up to 2.6 µg/ L. Tetrachloroethene (PCE) was detected at 1.5 µg/ L in a sample collected to the east of Building 123. The presence of organic extraction constituents is consistent with unconfirmed reports that such liquids used in radionuclide analyses were occasionally disposed onto the soil surface outside of Building 123 and allowed to evaporate. Analyses results indicate that subsurface infiltration precluded full evaporation.

The HRR also indicated a potential for soil contamination from sources other than Building 123 and associated OPWLs.

2.4 BUILDING HAZARD SUMMARY

Pursuant to RFCA criteria, a Reconnaissance-Level Characterization Survey (RLCS) was conducted to identify any hazardous and radioactive contaminants in the 123 Cluster. The survey identified no significant hazards associated with Buildings 113, 114 nor 123S, and indicated that the majority of Building 123 is considered to be "unaffected" (low potential for hazardous or radiological contamination) based on operational and process history. However, the following rooms in Building 123 were previously, or currently, posted as Radiation Control Areas (RCAs) or Radioactive Material Management Areas (RMMAs) and are therefore

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considered to be "affected" (potential for low-level contamination) and will require a more detailed survey prior to decommissioning: Rooms 103A, 105, 112, 123, 124, 125, 126, 127, 135, 149, 155A, 156, 157, 158, and 163.

In addition to radiological surveys, sampling and analysis efforts were conducted to determine the presence of beryllium, asbestos, lead, PCBs, and other potential contaminants. Hazardous chemicals associated with Building 123 operations included nitric acid, hydrochloric acid, hydrofluoric acid, oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate. Chemicals and waste materials are scheduled to be removed from the building prior to commencement of decommissioning activities. Potential hazards in the building are summarized in Table 2-4. These hazards were identified by a review of facility records and a visual survey of the building by project personnel, whom were assisted by building personnel familiar with the operational history of the facility.

The following potential hazards identified during the RLCS will be addressed during tenant relocation:

The liquid nitrogen system will be deactivated and associated pressurized cylinders will be removed from the building.

Laboratory chemicals will be removed from the building.

The following potential hazards identified during the RLCS will be addressed after tenant relocation, but prior to building demolition:

All ACM will be removed by a separate licensed contractor.
Fluorescent light ballasts will be evaluated for PCBs. Ballasts containing regulated levels of PCBs will be removed by the decommissioning contractor and packaged and shipped to a Toxic Substances Control Act (TCSA) regulated disposal facility by RFETS Waste Management.
Utilities and facility safety systems will be disconnected by Plant Power and Maintenance.
Material remaining in the building will be removed and properly managed.

2.4.1 Asbestos

Asbestos-containing materials (ACM) were inspected by a State-certified inspector the week of April 7, 1997. The inspection and evaluation was conducted in accordance with the guidelines specified in the Asbestos Hazard Emergency Response Act (AHERA) and in compliance with the US Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and State of Colorado asbestos inspection regulations. Abatement will be conducted by a contracted State-qualified abatement company.

A permit is required for asbestos abatement operations in accordance with Regulation 8, Control of Hazardous Air Pollutants, Part B, Section 3, (1)(a)(i); Notification will be made to the State of Colorado in accordance with Regulation 8, Part B, Section 3, (1)(a)(iii). A separate form for demolition is required for demolition in accordance with Regulation 8, Part B, Section 3, (3)(b)(i, ii, iii).

The following ACM sources and approximate volumes will be abated prior to commencement of decommissioning activities: thermal system insulation (900 linear feet); cementitious wallboard (3,450 square feet), drywall with tape and compound (4,000 square feet), resilient flooring (10,600 square feet), gray paper duct insulation (100 square feet), and mastic adhesive (40 square feet).

Table 2-4 Contaminants of Concern (COCs)

COC	Location	Implementation
Asbestos Containing Material (ACM)	Detected in floor and ceiling tiles; wall board; and as pipe insulation in most rooms.	To be remediated by a State-certified Asbestos Abatement Contractor. See Section 2.4.1
Beryllium	Present in Rooms 111 and 112	See Section 2.4.2.
Chemicals	Chemicals utilized in laboratory work have been identified.	All chemicals will be accumulated and removed from the building by the chemical handling group prior to commencement of decommissioning activities. See Section 2.4.3.
RCRA hazardous waste in Satellite Accumulation Areas (SAAs)	Present in Rooms 103A, 124, 125, 127, and 156.	Each waste stream will be managed according to associated waste components. See Section 2.4.4.
Perchloric acid fume hoods	Present in Rooms 157, 127, 112, and 105.	See Section 2.4.5.
Pressurized gas cylinders and liquid nitrogen	Present in laboratory areas.	See Section 2.4.6.
Polychlorinated biphenyls (PCBs)	Present in fluorescent light ballasts.	See Section 2.4.7.
Radiologically Contaminated Materials	Present in overhead piping, floor tiles in historical spill areas, on fume hoods, and laboratory counter tops.	See Section 2.4.8.
Metals (arsenic, cadmium, lead, lead-based paint, and silver)	Includes lead bricks and shielding; lead-based paint; lead and silver solder; nickel cadmium (NiCd) and lead acid batteries; and silver in photographic negatives.	See Section 2.4.9.

2.4.2 Beryllium

Thirty-nine (39) metal samples were collected by qualified beryllium sampling technicians from Rooms 111 and 112, laboratories that processed beryllium-contaminated samples as a function of site environmental soil sampling programs. The samples were submitted to an external analytical laboratory for analysis. Three (3) swipe samples taken in Rooms 123A, 111, and 112 indicated trace readings between 0.37 $\mu g/ft^2$ and 2.04 $\mu g/ft^2$ (RMRS 1997). All results were below the RFETS site housekeeping level of 25 $\mu g/ft^2$, a standard developed by the Atomic Energy Commission in approximately 1949 and adopted and used by RFETS since the 1960's.

Decommissioning of equipment contaminated with beryllium and subsequent free release of this equipment will be conducted in accordance with Kaiser-Hill and DOE guidance, policy and procedures.

2.4.3 Chemicals

Analytical chemicals currently associated with Building 123 operations are tracked by the RFETS Chemical Tracking Group under the "Right-to-Know" provisions of the Superfunds Amendments Reauthorization Act (SARA) and are being managed by the laboratories. The chemicals will be removed immediately following termination of laboratory operations. Chemicals remaining in the building will be managed by the RFETS Chemical Tracking Group which will utilize or package chemicals for disposal. The current inventory of the building includes nitric acid, hydrochloric acid, hydrofluoric acid, oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, DDCP, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate.

2.4.4 RCRA Hazardous Waste in Satellite Accumulation Areas (SAAs)

Satellite Accumulation Areas (SAAs) were established in Rooms 103A, 124, 125, 127, and 156 to ensure proper storage of RCRA hazardous wastes near the point of generation. The SAAs are no longer active. The chemicals have been properly containerized, labeled and dispositioned.

Representative waste types that were accumulated in each area are summarized as follows:

Room 103A - Combustibles, waste isopropynol, DDCP/toluene
Room 124 - Liquid waste methanol, isopropynol
Room 125 - DDCP/toluene, isopropynol contaminated with toluene
Room 127 - Hydrochloric acid, hydrofluoric acid, ethanol
Room 156 - Combustibles, waste toluene/DDCP, isopropynol

2.4.5 Perchloric Acid

Perchloric acid hoods currently occupy four rooms [105, 112, 127 and 157(2 hoods)] within Building 123. Chronic use of perchloric acid may have caused the chemical to crystallize inside the hoods. The crystalline form may be sensitive to shock and could represent a potential physical hazard during decommissioning activities. To mitigate such a hazard, all hoods and duct work will be flushed and the rinsate directed to the Site process wastewater treatment plant in Building 374. Site Health and Safety have reviewed requirements for decontamination of perchloric acid hoods. The steps outlined in the requirements include interviews with laboratory personnel; building walkdowns, necessary repairs, and washdowns of all hoods and associated ductwork; and dismantlement of ductwork into easily managed sections. The requirements also define proper segregation and disposal of all solid duct material.

2.4.6 Pressurized Gas Cylinders and Liquid Nitrogen

Pressurized gas cylinders used by the laboratories will be removed by laboratory personnel during tenant relocation. The liquid nitrogen system will be disconnected and removed in conjunction with utility deactivation.

2.4.7 Polychlorinated Biphenyls (PCBs)

Potential exists for the presence of PCBs in fluorescent light ballast. Consequently, all light ballast will be evaluated for PCB contamination and properly segregated after the building has been vacated and lights are no longer required. All light ballast marked "PCB Free" or "No PCBs" will be managed as non-hazardous solid waste and disposed at a sanitary landfill. Ballast marked "PCBs" or not marked and not leaking will be packaged for disposal at an TSCA-permitted facility. Leaking PCB light ballast and unmarked leaking light ballast will be managed as fully-regulated PCB Articles.

In accordance with the Reconnaissance Level Characterization Plan, a walkthrough was conducted to evaluate the potential for PCBs in the 123 Cluster. Of particular concern, was the possible presence of PCBs in paint. A historical review regarding the use of PCB paints in industry and at DOE sites was conducted prior to the walkthrough. This review included interviewing representatives at Savanna River and PCB paint manufacturer. This data was used to delineate areas of concern during the walkthrough that would require sampling. One area was identified and sampled as a result of the walkthrough. The results were nondetect for PCBs. Based on Process Knowledge and supported by limited sampling data, there is no indication that PCBs are present in paints in the 123 Cluster.

2.4.8 Radiologically-Contaminated Materials

Radiological assessments have been conducted in Building 123 by RFETS Radiological Safety. Most of the following Radiological Material Management Areas (RMMAs) exist in laboratory hoods: Rooms/Labs 103A, 105, 112, 124, 125, 156, 157, and 163. RCAs exist in Room/Labs 103A, 105, 112, 123, 124, 125, 126, 127, 135, 149, 155A, 156, 157, 158, 163. Radiological sources are stored in 123, 126, and 155A. All RMMAs and RCAs are managed according to associated radiological characteristics. Floor tiles removed from areas that exhibit noticeable signs of spill contamination or are suspect of contamination as a result of a known spill incident, will be treated as LLW. In the event that contaminated tiles cannot be scabbled from the foundation, entire floor sections which indicate evidence of spill contamination will be removed and treated as LLW.

2.4.9 Metals

To support industrial hygiene efforts, samples were collected from selected painted surfaces in Building 123 and were analyzed for the following metals: lead; chromium; cadmium; and arsenic~~. to support industrial hygiene efforts~~. Site historical knowledge and recommendations by an accredited inspector were utilized in the sampling process. Twenty-one (21) samples were collected, and analysis was conducted using Atomic Absorption Spectroscopy by a third independent party. All paints indicated detectable levels of one or more of the metals. Representative samples were taken and analyzed ~~will be analyzed~~ using the Toxicity Characteristic Leaching Procedure (TCLP). ~~Should the TCLP analysis indicate the painted surfaces are leachable for heavy metals, they will be managed as hazardous waste. Otherwise,~~ Analysis indicate that although painted surfaces contain significant levels of heavy metals by total analysis, the metals are in a form that does not readily leach. None of the TCLP sampling conducted on paint samples in B123 indicated RCRA regulated levels of these metals. Therefore, painted surfaces of construction materials will be managed as RCRA non-hazardous solid waste. ~~standard construction debris.~~

Lead bricks and shielding are located throughout the radiological areas to mitigate background radiation and protect personnel. The largest volume of lead is used to shield detectors and radiological sources. All lead or lead-bearing material will be removed by the source owners or dispositioned through the RFETS Property Utilization and Disposition Department.

3.0 PROJECT APPROACH AND OBJECTIVES

Building 123 will be decommissioned using a phased approach. A description of each of these phases and the activities that will be completed during each phase is provided below:

Phase I, Building 123 Strip-Out. The following tasks will be completed during Phase I:

- Limited asbestos abatement (for example cementitious cabinet and hood linings, mastic under a laboratory counter top).
- Removal of radioactively contaminated asbestos floor tile in Room 105, 109 and 109B.
- Removal of all carpet.
- Removal of process hoods and associated ducting, including a thorough rinse of the hood and ducting system, process waste system, and process scrubbers for perchloric acid.
- Removal of laboratory cabinets, counter tops, and sinks.
- Removal of the process waste piping and ancillary equipment after completing a RCRA Closure rinse and rinsate analysis.
- Removal of ducting, piping, and other ancillary equipment for the process scrubbers and isolation of the scrubbers.
- Removal of other miscellaneous items such as fire protection equipment that will be salvaged for future use.
- Utility Isolation for Building 123 (power, water, communications, steam, natural gas, and plant air).

Phase II, Asbestos Abatement. The following asbestos containing materials will be abated during Phase II:

- Drywall mud, tape and joint compound.
- Floor tile.
- Cementitious wall, excluding the transite panels above the exterior windows.
- Pipe insulation for steam, condensate, domestic cold water, and domestic hot water. This shall include insulation of the steam lines entering Building 123 on the east side. Insulation shall be removed back to the main elevated steam/lines.
- Duct insulation on roof.
- Asbestos Containing Doors.

Phase III, Demolition of Building 113, 114, 123, and 123S. The following tasks will be conducted during Phase III:

- Removal of asbestos contaminated wall panels above exterior windows.
- Removal of miscellaneous materials (for example the lead/steel vault in Room 155, transformer in rooms 123A, 132, and 159, refrigerators, and process scrubbers).
- Utility isolation for Building 113.
- Demolition of Buildings 113, 114, 123, and 123S to the foundation slab.

Phase IV, Characterization ~~and Remediation~~ of IHSS 121 and 148. This phase includes the

following tasks:

- Sampling the building slab and surrounding soils according to the Sampling Analysis Plan.
- Sample analysis.
- Developing a ~~remediation plan~~ final sampling report based on the results of the sampling.
- ~~Remediation activities~~. Submittal of final sampling report/analysis to ER.

The primary decommissioning objectives will be accomplished according to an integrated scope, schedule, and cost control system. All compliance documentation and project plans will be prepared and approved by RFETS Decommissioning and Demolition Management under a Project Execution Plan to ensure that decommissioning efforts are conducted in a safe and compliant manner.

All building utilities and associated facility safety systems will be disconnected prior to commencement of building demolition. The active process waste piping system in Building 123 (a component of RCRA Unit 40) will undergo closure according to State approved RCRA Closure Plan. The building will be safely dismantled and the resulting debris and waste will be properly characterized and disposed at appropriate off-site facilities. In addition, soil sampling beneath and adjacent to the building will be conducted using the methods described in a Sampling and Analysis Plan (SAP) prepared for this project. The SAP will be submitted to CDPHE at least 45 days prior to implementation. Characterization data from IHSS 121 and 148 will be provided to Environmental Restorations (ER) Projects for evaluation and consideration for remediation. The outcome of this evaluation will be to adjust the ranking of these IHSSs, if necessary, in the ER Ranking List. ~~Underground pipelines will be managed with respect to soil sample analyses results.~~ Soil remediation, if necessary, will be conducted by ER in compliance with ~~respect to~~ RFCA Action Levels in a manner that is protective of human health and the environment. Soil remediation is not within the scope of this project.

The project will use standard industry practices, but will also incorporate lessons learned from previous demolition projects at RFETS and utilize personnel with expertise in decontamination and decommissioning activities.

3.1 SCOPE

Activities supporting the decommissioning effort have been divided into three general areas: (1) planning and engineering; (2) characterization; and (3) remediation. The scope includes removal of all internal piping, ventilation, and process waste systems. All rubble and materials removed during decommissioning activities are to be recycled or disposed at an appropriate offsite facility.

3.1.1 Planning and Engineering

Regulatory activities are completed as part of this action to ensure that the action is conducted in a manner consistent with the RFCA and regulations of the State of Colorado. Activities include assurance of public involvement and practical mitigation of environmental impacts. Planning objectives have been accomplished through project scoping meetings with CDPHE and EPA, and approval of the PAM document by the appropriate regulatory bodies and the general public. Other regulatory activities include General Services Administration (GSA) and Housing and Urban Development (HUD) notifications, establishment of the CERCLA administrative record, compliance with the Historic Preservation Act [including site programmatic consultation with the Colorado State Historic Preservation Office (SHPO) and the US National Park Service], and notification of asbestos abatement.

Specific planning documents include, a Reconnaissance-Level Characterization Report (RCLR), a Health and Safety Plan (HSP), a Waste Management Plan (WMP), an IHSS Sampling and Analysis Plan (SAP), and documentation detailing the programmatic consultation with the SHPO. Also, the SAP, Remediation Plan and RCRA Unit 40 Closure Plan will be submitted to CDPHE for review and approval prior to initiation of work governed by those documents. The documents will be provided to prospective decommissioning contractors as part of the project procurement package and will also be available to the general public upon request. A site visit will be conducted to facilitate preparation for demolition activities. A design package will be prepared for decommissioning activities which will define locations and configurations of active and inactive utility systems, summarize sample and analysis data, indicate as-built drawings, and present engineering estimates for building decommissioning.

3.1.2 Characterization

3.1.2.1 Building Characterization

Characterization activities associated with the decommissioning effort include survey of interior building surfaces. A final radiological characterization and survey for Building 123 will be performed in accordance with the decommissioning guideline in Interagency Multi-Agency Radiological Site Survey and Site Investigation Manual (MARSSIM) a draft decommissioning document developed by the Nuclear Regulatory Commission (NRC), Department of Defense (DoD), and the DOE in conjunction with Draft NRC NUREG/CR-5849, *Manual For Conducting Radiological Surveys In Support of License Termination*. Copies of the documents are included as Attachment A. The purpose of a final survey will be to verify that demolition rubble can be released to a commercial sanitary or demolition landfill. The survey will be completed following asbestos removal.

The methodology used to classify radiological areas of the building is described below:

Class 1 impacted areas exhibit or have demonstrated potential for radioactive contamination

based on site operating history. Such areas may also indicate radioactive contamination that exceeds the applicable limits, based on previous radiological surveys. Typical Class 1 impacted areas have been remediated as a response to leaks and spills and include former disposal or burial sites, waste storage sites and areas with contaminants in discrete solid pieces of material that exhibit high specific activity.

Class 2 impacted areas exhibit or have demonstrated potential for radioactive contamination based on site operating history, but are not expected to exceed the applicable limits. Typical Class 2 areas include locations of unsealed radioactive material, potentially contaminated transport routes, upper walls and ceilings of buildings or rooms subjected to airborne contamination, areas downwind from stack release points, areas where low concentrations of radioactive material were handled, and perimeters of former contamination control areas.

Class 3 impacted areas are not expected to contain any radioactivity, or are expected to exhibit levels of residual radioactivity at a small fraction of the applicable limits, based on site operating history and previous radiation surveys. Examples of Class 3 areas include buffer areas around Class 1 and Class 2 areas and areas of very low potential for residual contamination.

Non-Impacted areas have no potential for residual radiological contamination.

Characterization/scoping surveys were used to determine the classification of each area in Building 123. Impacted areas required the performance of extensive radiological surveys based on requirements for Class 1, Class 2 or Class 3. Areas initially classified as Class 1, Class 2 or Class 3 impacted were reevaluated when initial characterization indicated that no radiological contamination exists above the applicable limits, based on potential radiological contamination from historical reviews versus actual contamination shown on previous surveys. A comprehensive, but less extensive survey was performed on all other building surfaces considered to be Class 2 or Class 3 impacted. The initial classification may be modified as additional in-process data are collected.

Class 1 impacted areas were divided into one-square-meter grids, and a minimum of one fixed and one removable contamination measurement for beta/gamma and alpha was obtained for each grid location. In addition, a 100% scan for beta/gamma and alpha was performed on all accessible surface areas. Class 2 impacted areas was divided into one-square-meter grids, and a minimum of one fixed and one removable contamination measurement for beta/gamma and alpha was obtained for each grid location. A 10% scan for beta/gamma and alpha was performed on all accessible surface areas. Class 3 impacted areas were surveyed at a minimum frequency of one fixed and one removable contamination measurement for beta/gamma and alpha for each nine square meters of accessible surface areas. In addition, 10% of all accessible surface areas were scanned for beta/gamma and alpha contamination.

Areas considered to be non-radioactive were classified as Class 3 impacted areas. Non-

impacted areas will not require a radiological survey. Areas that have been identified as Class 1 are Room 105 (ceiling not impacted) and the process waste sumps in Rooms 156, 157, and 158. Areas identified as Class 2 are 106, 109, 109A, 109B, and 123 (floors only); and Rooms 103, 103A, 111, 112, 124, 125, 127, 156, and 157 (ceilings not impacted). All remaining rooms and areas in Building 123 have been identified as Class 3. Buildings 113 and 114 are classified as non-impacted areas. Building 123S will be moved for reuse and was not classified.

All contaminated building surfaces, equipment and demolition materials will be managed according to waste type, with respect to Attachment 9.0 of RFCA. Following decontamination activities, the RFETS Building Radiation Cleanup Standard (BRCS) will be utilized to determine if residual radioactive constituents contained in remaining equipment and demolition debris is compliant with RFCA guidelines and appropriate as-low-as-reasonably-achievable (ALARA) considerations. The BRCS is currently under development in coordination with the EPA, CDPHE, and DOE. Until the BRCS is approved, more conservative criteria defined in DOE Order 5400.5 and associated RFETS radiation protection procedures will be used to determine if building surfaces, equipment and demolition debris are acceptable for unconditional release.

3.1.2.2 Soil Characterization

Soil characterization will include sampling and analysis of soil beneath and surrounding Building 123. Following removal of the building superstructure, samples will be collected through the slab ~~to determine need for soil remediation~~ and from the surrounding area. A SAP will be written to guide characterization activities in these areas. ~~The SAP will be finalized prior to the award of the decommissioning contract.~~ In accordance with paragraph 118 of the Rocky Flats Cleanup Agreement and the August 25, 1997 State of Colorado approval of the Building 123 PAM, the IHSS 148 SAP will be submitted to CDPHE for review and approval. The SAP will incorporate a review of existing records to establish the location of potentially contaminated areas and to define sampling protocol. ~~Sample location, depth and frequency will include recommendations from the RFETS Statistical Applications Group~~. Current planning indicates a need for ~~approximately fifty (50)~~ soil samples from beneath both the slab of Building 123 and from areas surrounding underground OPWLs. Samples locations will be designed ~~collected at depths immediately below the pipe~~ to locate any contamination that may have leaked from the ~~lines~~ OPWLs and the RCRA regulated underground waste process lines associated with Building 123. Samples will be analyzed for volatile organic compounds (VOCs), Target Analyte List (TAL) metals, radionuclides, and nitrates. Data quality requirements supporting the analysis effort will conform to criteria established in *Guidance for the Data Quality Objective Process,* EPA QA/G-4 (EPA 1994).

3.1.2.3 OPWL Characterization

A plan for partial closure of RCRA Unit 40 will be written to characterize and manage all active OPWLs associated with Building 123, as all abandoned lines were properly decommissioned

prior to implementation of RCRA regulations. Characterization will include flushing the active lines ~~with rinse water~~ with decontamination solutions as identified in the approved RCRA Closure Plan for this unit in order to remove residues, then sampling the final rinsate for constituents. Soil sampling of areas adjacent to abandoned OPWLs will be used to characterize and rank using the ER ranking system. The need for further remediation, if any, will be evaluated by ER. ~~managed according to analyses results from soil samples collected adjacent to and beneath the lines.~~

3.1.3 Remediation

3.1.3.1 Building Removal

As part of the decommissioning process, all utilities and electrified systems will be disconnected and capped. The scope of the building decommissioning effort also includes removal of all interior piping, ventilation and above-slab waste systems. Demolition activities will be conducted in two primary phases. Initially, the hoods, laboratory counters, cabinets and radiologically contaminated floor tile will be removed from the laboratories. Removal will allow radiological surveys to be conducted on the walls of the laboratories before asbestos abatement. Hood ductwork and scrubbers will also be removed during this phase. Removal of the ductwork and scrubbers will eliminate a potential hazard (disruption of crystallized perchloric acid, see Section 2.4.5), prior to demolition of the structure. All building utilities will also be deactivated during this phase. Following removal of all asbestos from the building, a final radiological survey of the building will performed to verify that all building rubble can be disposed in an off-site landfill.

The second phase of demolition involves removal of the building superstructure, which will be removed using mechanical shears and front-end-type loaders. A crane will be utilized for removing large equipment and debris, and roof-based systems. Use of heavy equipment will minimize worker exposure to demolition hazards. Fugitive airborne emissions will be minimized with water sprays. The building will be surveyed for free release prior to demolition, and building rubble will be segregated and disposed at properly licensed facilities, depending on the type of waste stream created as a result of demolition activities. Friable asbestos will be disposed at Kettelman, California; non-friable asbestos and sanitary waste will be disposed at USA Waste, Erie, Colorado; LLW will be disposed at Nevada Test Site (NTS); Radioactive ACM will be disposed at Hanford Site, Washington; and low-level mixed waste (LLM) will be stored temporarily on site until an appropriate off-site facility is identified.

3.1.3.2 Soil Remediation

Soil remediation is not within the scope of this project. Sufficient soil sampling beneath the building slab and from the surrounding area will be taken in order to adequately characterize the IHSS 121 and 148 areas around B123. This information compiled in a sample report will be submitted to ER. ER will use this information to adjust the ER Ranking List, if necessary.

The Ranking List will determine, what if any, soil remediation will be conducted at this location.

~~Remedial actions will be contingent upon compliance of sample analysis results with Tier II "action level" criteria defined in Appendix 6 of the RFCA. The extent of subsurface contamination will dictate the method of remediation. Areas in which soil sample results meet Tier II criteria will require no further action. Areas that exhibit radioactive or chemical contamination at levels in excess of RCRA regulatory levels will be excavated using conventional techniques and removed and disposed offsite as RCRA hazardous waste. Soil will be moved to a temporary staging area immediately adjacent to the site and placed in rolloff containers until proper disposition is determined. Contaminated soil will ultimately be disposed offsite as RCRA hazardous waste. At the completion of excavation activities, verification samples will be collected along the base and sides of the excavation(s) to determine post action condition of the subsurface soils. Samples will be analyzed according to the SAP. If analytical results indicate that contamination is present above Tier II Action Levels, further excavation and sampling will continue until the Tier II criteria are met.~~

3.1.3.3 Evaluation of Process Waste Lines ~~OPWL Remediation~~

RCRA Clean Closure of the active process waste lines ~~Proper closure of active lines~~ will be contingent upon rinsate and soil sampling analyses results. Partial closure of RCRA Unit 40 will be conducted in accordance with Colorado Hazardous Waste Regulations (265, Subpart G) which requires a 30-day public comment period. Remedial and disposal options for partial closure of RCRA Unit 40 will be further defined in a separate closure plan. In the event that no contamination above Tier II action levels is detected, active lines will be foamed and capped in place. In the event that contamination above the Tier II action levels is detected in either the surrounding soil or process waste lines, these portions of RCRA Unit 40 will be deferred to ER for evaluation.

Closure of abandoned lines will be managed with respect to soil sampling analyses results. Any indication of soil contamination as a consequence of leaking underground lines will eventuate proper removal and disposal of the lines. ~~Partial closure of RCRA Unit 40 will be conducted in accordance with Colorado Hazardous Waste Regulations (265, Subpart G) which requires a 30-day public comment period. Remedial and disposal options for partial closure of RCRA Unit 40 will be further defined in a separate closure plan.~~

3.2 WORKER HEALTH AND SAFETY

The project will comply with OSHA construction standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120. An HSP is being developed in accordance with this standard. The plan will address potential hazards of each phase of the decommissioning process and specify the requirements and procedures for personnel protection. DOE Order 5480.9A, *Construction Project Safety and Health Management*, will provide additional guidance for this project. The DOE order requires the preparation of Activity Hazard Analysis

to identify each task and associated hazards, and the controls necessary to mitigate the hazards. The requirements will be integrated as appropriate. In the event of an unforeseen deviation from the planned approach, a second Activity Hazard Analysis will be prepared to address altered circumstances, and work will proceed according to the appropriate control measures. Data and controls will be continually evaluated. Radiological Work Permits will be generated for contaminated areas and will identify the location of potential surface contamination, define the appropriate PPE, and apply appropriate airborne radioactivity controls, if necessary. As required by 10 CFR 835, *Occupational Radiation Protection*, all applicable implementing procedures will be followed to insure protection of the workers.

3.2.1 Personal Protective Equipment (PPE)

Decommissioning activities may potentially expose workers to physical and chemical hazards and low levels of radiological activity. Physical hazards associated with decommissioning activities include: the use of heavy equipment, electrical shock, noise, heat stress, and work on elevated surfaces. Physical hazards will be mitigated by appropriate use of personal protective equipment (PPE); and application of pre-engineering evaluations, pre-evolutionary meetings, proper training, and administrative controls. Decommissioning activities which require dismantlement of radiologically contaminated systems will be conducted using Level C PPE. This level includes a full-face respirator, steel toe safety shoes, hard hat, anti-C Tyvek coveralls, gloves, disposable shoe covers, and hearing protection (if applicable). Decommissioning of uncontaminated systems or structures will be conducted using Level D PPE, which includes safety glasses or face shield, with neither a respirator nor Tyvek coveralls as described above.

Employee exposure evaluations conducted by an Industrial Hygiene (IH) Site Health and Safety Officer will determine PPE levels, which may change with conditions.

3.2.2 Ambient Air Monitoring

The existing Radioactive Ambient Air Monitoring Program (RAAMP) continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-one (31) samplers comprise the RAAMP network. Twelve (12) of these samplers are deployed at the Site perimeter and are used for confirmatory measurements of off-site impacts. The remainder are used as backup measures for determining local impacts from clean-up projects. Building 123 was not a plutonium, uranium or beryllium operations building, and based on results of radiological and beryllium surveys, the decontamination and demolition of Building 123 will not warrant special environmental monitoring. However, in response to a possible need for remediation of soil beneath the building slab with respect to soil sample analysis results, the project will operate a minimum of two low volume particulate samplers in the vicinity of the project site: One sampler will be located in the predominant upwind direction, and at least one sampler will be placed in the prevailing downwind direction. Specific sampler locations will be selected based on vehicular and pedestrian traffic patterns.

Air Quality Management (AQM) will be consulted to select sampler locations. The samplers will be operated continuously during active decommissioning activities and will be changed weekly. AQM will reevaluate the configuration of the air monitoring network if project management surveillance of operations indicates a potential for significant increases in radionuclide emissions. Action levels associated with surveillance activities are defined in the Facility Implementation Plan (FIP). AQM will be appropriately notified when action levels are exceeded.

Water sprays will be used to minimize resuspension or fugitive dust emissions. In addition, earth-moving operations will not be conducted during periods of sustained high winds. If necessary, AQM will identify monitors within the existing ambient network located in the immediate area of Building 123, and the frequency of filter collection and filter analysis at those locations will be adjusted to provide timely information on the project emissions.

3.3 QUALITY ASSURANCE

A commitment to program quality and continuous improvement is applied at all levels from project start through completion. Adherence to the commitment is instrumental in the success of the project. All project personnel are responsible for following approved QA program requirements and participating in quality improvement activities.

Quality Assurance/Quality Control personnel are involved at the initial planning stages of the project, during site preparation, and during project execution. The QA organization assumes a proactive role during the project by identifying and/or preventing potential problems or shortcomings; offering solutions; and assisting in corrective action steps. QA personnel administer and perform duties in accordance with approved QA program requirements. The scope of the QA/QC program ensures:

- consistency and effective implementation of management/DOE directions and policies with other project/DOE requirements through audits and surveillances;
- assurance of document review and approval requirements through review of applicable procurement and work documents;
- validity of data gathering methodologies;
- compliance with standard operating procedures;
- integrity of waste packaging and incoming materials through inspections;
- facility characterization through performance of facility walkdowns;
- initiation of monitoring projects for potential improvements; and
- emplacement of corrective action initiatives.

3.4 WASTE MANAGEMENT

A Waste Management Plan will be developed for the project to define waste management activities. Estimates of waste volume indicate that decontamination, dismantlement, and

decommissioning of Building 123 ~~and the remediation of surrounding areas~~ will generate less than 300 cubic yards (cu yd^3) of rubble ~~and contaminated soil~~. The waste will be designated as LLW, LLM, hazardous, or industrial waste and will be managed in accordance with State and Federal regulations by properly trained personnel. Waste Operations will arrange for transportation to an appropriate off-site facility. Manifests will be the responsibility of RFETS Traffic Department. Waste management training requirements are outlined in *Part IX Personnel Training of the Rocky Flats Environmental Technology Site RCRA Permit* (DOE 1997). The training matrix defined in Part IX details the training requirements for all personnel managing hazardous waste. Although the document is part of a permit, all RCRA training requirements of 6 CCR 1007-3, 265.16 are met.

3.4.1 Non-Regulated Waste

Release of non-contaminated materials, debris, and equipment from a site contaminated with hazardous constituents is accomplished by demonstrating that the materials or wastes do not exhibit any of the characteristics of hazardous waste as identified in Subpart C of 6 CCR 1007-3 SS261. Additionally, the material must not be qualified as a listed waste as identified in Subpart D, or be excluded under provisions in 6 CCR 1007-3 SS261.4, *Exclusions*. Non-contaminated recyclable materials, such as scrap metal, will be placed in approved waste crates and later segregated into bins supplied by Property Utilization and Disposal (PU&D). Additional items will be placed onto pallets for shipment to PU&D. All remaining non-regulated, standard industrial-type waste generated from decommissioning activities will be disposed at an off-site landfill.

3.4.2 Regulated Waste

Process knowledge and relative operating history will be used to manage contaminated areas apart from unaffected areas. Contaminated material will be segregated, categorized, and packaged according to the specifications for disposal in permitted hazardous waste, LLW, or LLM facilities. Waste characterization data and packaging requirements for LLW will meet the procedures and policies for managing LLW as outlined in the RFETS Low-Level Waste Management Plan. (Low Level Waste Management Plan 44-RWP /EWQA - 0014, Rev. 1, 1996). Waste Operations will designate temporary storage locations for LLW, LLM, or hazardous waste, as conditions warrant.

4.0 ENVIRONMENTAL IMPACTS

The National Environmental Policy Act (NEPA) requires that actions conducted at the RFETS consider potential impacts to the environment. While no separate NEPA documentation is required for this effort, RFCA requires DOE to consider environmental impacts of the proposed action and of alternatives as a part of this document.

4.1 PROPOSED ACTION AND ALTERNATIVES

4.1.1 Proposed Action

The proposed action is the Decommissioning and Demolition (D&D) of Building ~~123, including site remediation~~. D&D activities ~~and site remediation~~ are to follow a project-specific plan approved by DOE and CDPHE. Activities would generally consist of site and facility characterization, decontamination, dismantlement, waste ~~disposition and remediation of any contaminated soil and pipelines~~. All hazardous, LLW and LLM generated by D&D activities would be transported to an appropriate offsite facility for disposal. The objective of the proposed action is to obtain from DOE and CDPHE a timely release of the site for unrestricted use.

D&D includes removing or decontaminating equipment, decontaminating building surfaces and structural members; surveying the facility for residual contamination; and characterizing, packing, and shipping the resulting wastes. Removal of residual contamination would be initiated with the simplest and least aggressive method, such as decontamination using vacuums and damp cloths. Increasingly aggressive techniques would be employed, as appropriate, to remove the remaining fixed contamination, including hand washing or scrubbing; dry abrasive blasting and scabbling; or scarification. New, innovative technologies will be considered if sufficiently developed and cost-effective.

Subsequent D&D activities would include application of fixatives to all contaminated surfaces to prevent the dispersion of contaminants during dismantlement. A survey would be performed to assure that all contaminants are fixed in place. The entire facility would be dismantled (with the exception of the building slab) and debris would be shipped to appropriate offsite facilities for disposal.

~~Final D&D activities would include remediation of soil and underground piping beneath and surrounding the building slab. Remediation may include removal of contaminated soil, associated pipelines, and/or the concrete slab. Following proper remediation, the site would be regraded and seeded in an attempt to return the site to a natural state.~~

4.1.2 Alternative Actions

Alternative 1 to Proposed Action: No Action, Maintain Safe Shutdown Decontamination

The alternative would involve maintenance of Building 123 in a safe-shutdown status, including a commitment to long-term surveillance and upkeep, while performing a continued environmental monitoring program to ensure that contamination has not escaped to the environment. Regularly scheduled inspection and maintenance of health, safety, and radiation

protection equipment would be performed and documented.

Alternative 2 to Proposed Action: Partial Facility Dismantlement with Minimal Decontamination

The alternative would involve minimal decontamination and demolition activities. All building equipment would be removed, including all hoods and overhead process waste lines. The remaining structure and surrounding area would be treated.

Evaluation of Alternatives

Both alternatives were rejected as operative actions, since such efforts would prevent proper cleanup of RFETS as specified under the Life Cycle Baseline. Maintenance and surveillance would need to increase with time as eventual degradation of the building structure would pose a threat to the public through chemical and physical hazards. Potential also exists for groundwater contamination through release of contaminants to the soil as the integrity of piping systems and sumps will eventually be compromised.

4.2 POTENTIAL ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Potential environmental effects associated with the D&D of Building 123 are described in the following sections.

4.2.1 Geology and Soils

Decommissioning activities will disturb less than one (1) acre of land, most of which has previously been disturbed. Activities such as excavating could cause localized soil slumping to occur. Soil recontouring will be conducted after buildings are removed. Potential effects will be short-term increases in soil erosion and siltation, and small, temporary losses in soil productivity. A commitment to complete appropriate revegetation will be initiated to mitigate any impacts caused by soil disturbance activities. All project areas not paved or already vegetated will be revegetated as directed by Site ecologists. Topsoil of sufficient quality will be used to support revegetation.

4.2.2 Air Quality

No continuing long-term air quality impacts are expected after the project has been completed. Short-term impacts will be mitigated by dust suppression techniques and excavation controls. The potential for release of small quantities of toxic, hazardous and/or radioactive contaminants will remain, though the potential health effects to workers and the public from such releases is expected to be negligible. Air quality impacts are further discussed in Section 5.1.1, and air monitoring criteria are defined in Section 3.2.2. Dust generated during the decommissioning effort will be managed with engineering controls.

4.2.3 Water Quality

Major surface water and groundwater quality impacts are not anticipated. The excavation area(s) will include run-on and run-off controls to prevent stormwater from contacting the wastes, and are not expected to intersect the groundwater table. Silt fences or similar barriers will be installed to prevent storm water runoff from carrying excavated soil from the project site. Removal of buildings and excavation of paved areas will result in a net decrease in storm water runoff from the Building 123 area and a corresponding increase in the amount of precipitation that percolates into the soil. Most of the local precipitation either evaporates on the ground surface or is taken up by vegetation. Surface water monitoring has been established at the Central Avenue ditch by RFETS Water Quality under a monitoring IRA.

4.2.4 Fauna and Flora

Building 123 is not located near any wetlands or habitat suitable for the threatened and endangered species. A migratory bird survey of the project site will be conducted by Site ecologists within two weeks of the beginning of field activities, and activities will not be initiated except in compliance with the Migratory Bird Species Act and as approved by Site ecologists. An attempt will be made to preserve the condition of four large trees along the north end of the site. Although no penalties exist for removing the trees, preservation will provide nesting areas for aviary species. If removal is necessary, the trees will be surveyed for nests by Site ecologists two weeks prior to destruction.

4.2.5 Human Health

Human health impacts will be maintained within applicable limits for worker protection, and requirements will be implemented to control the dispersion of contamination to air, water, and soil. Exposures to workers and the public will be controlled and monitored in accordance with standards defined in Section 5.0. Health effects to workers and the public are expected to be well within applicable limits, as operating procedures and other requirements will be implemented to protect human health.

Occupational safety impacts will also be mitigated according to applicable requirements. The Site *Cumulative Impacts Document* estimates a site-wide illness/injury rate of 13.6 per 200,000 hours worked in D&D activities.

4.2.6 Noise

Decommissioning activities will involve common industrial activities (e.g., wiping, disassembly, sawing and crushing) with a variety of associated noise levels. Many of the activities will be conducted within the building; thus, elevated noise levels will be muffled by the building

structure. Other, less common techniques such as scabbling, blasting and demolition by pneumatic hammer, wrecking ball, or other devices are expected to generate higher than ambient noise levels. Workers involved in such activities will use appropriate hearing protection devices. Outdoor activities will be conducted in a safe manner in which noise will not affect non-involved workers and the public.

4.2.7 Historical Resources

The programmatic agreement between the DOE Rocky Flats Field Office, the Colorado SHPO, and the Advisory Council on Historic Preservation has been approved. Building 113 is a guard post of the type denoted for documentation as a historical building. The documentation is under preparation and scheduled to be completed by September 30, 1997. Arrangements are being made to take streetscape photographs of Building 123 which has been designated as a Potentially Historic Structure. The terms of the agreement will be met before initiation of decommissioning activities.

4.2.8 Visual Impacts

Demolition of Building 123 and associated buildings will result in a flat, ground-level surface of pavement or revegetated soil where the buildings had previously stood. The appearance of surrounding areas will remain as industrial until additional buildings are demolished.

4.2.9 Cumulative Impacts

Decommissioning and demolition of the 123 Cluster comprises part of a broader program to decommission and demolish all but nine (9) of the approximately 700 buildings on the RFETS site. The cumulative effects of this program are described in detail in Section 5 of the *Cumulative Impacts Document.* In summary, such effects will result in a site with only nine (9) buildings, selected streets, a minor degree of infrastructure (water, sewer and electric service), and a large area of vacant land.

5.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

RFETS decommissioning actions performed under a PAM must attain, to the maximum extent practicable, Federal and State applicable or relevant and appropriate requirements (ARARs). ARARs associated with this document are a subset of the Federal and State requirements, which pertain directly to actions or conditions in the environment and are either applicable or relevant to particular decommissioning activities. D&D efforts performed according to the PAM must attain, to the maximum extent practicable, Federal and State ARARs.

Applicable requirements are cleanup standards; standards of control and other substantive

environmental protection requirements; criteria; or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site.

Relevant and appropriate requirements are cleanup standards; standards of control and other substantive environmental protection requirements; criteria; or limitations promulgated under Federal or State law, that while not applicable to a pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, can sufficiently address problems or situations similar to those encountered at a CERCLA site.

ARARs associated with D&D projects include:

chemical specific: quantitative health- or risk-based restrictions upon exposure to types of hazardous substances [e.g., drinking water standards as defined by Maximum Contaminant Levels (MCLs)];

action specific: technology-based requirements for actions taken upon hazardous substances (incinerator standards that require particular destruction and removal efficiency); and

location specific: restrictions upon activities in certain special locations (standards that prohibit certain types of facilities to operate in designated flood plain areas).

Table 5-1 is a general list of ARARs that are applicable for this project. A specific list is included as Attachment B.

5.1 CHEMICAL-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

The project will encounter conditions regulated by the following chemical specific restrictions. The restrictions will be incorporated into the project planning effort and will be assured by following site procedures or by direct inclusion in the IWCP.

5.1.1 Airborne

The following Colorado Air Quality Control Commission (CAQCC) Regulations serve as applicable requirements:

- Reg. 8, Part A, (40 CFR Part 61) Subpart H regulates radionuclide emissions other than radon from DOE facilities and will apply to Building 123 if radiological contamination is discovered during characterization activities. 40 CFR 61.92 requires that no member of the public receive more than 10 mrem per year above background from airborne sources of radiation. Compliance with 40 CFR 61.92 is performed on a sitewide basis as a response

to all RFETS sources, in which stack monitoring is required for all release points contributing greater than 0.1 mrem/year. Based upon preliminary estimates, monitoring will not be required. A formal analysis will be prepared.

- Reg. 8, Part B defines emission standards for asbestos.

- Reg. 8, Part C establishes an emission standard for lead in ambient air. The regulation states that no person shall cause or permit emissions of lead into the ambient air which would result in an ambient lead concentration exceeding 1.5 $\mu g/m^3$ averaged over a one-month period. The regulation will apply to any decommissioning activities with the potential to emit lead into the ambient air.

Table 5-1 General List of Applicable or Relevant and Appropriate Requirements for Decommissioning and Demolition Activities at RFETS

Requirement	Applicable	Relevant and Appropriate	TBC
DOE Order 5400.5, *Radiation Protection of the Public and Environment*	No	No	Yes
40 CFR 191, *Radioactive Dose Standards* (Spent Nuclear Fuel; High Level and Transuranic Radioactive Wastes)	NA	NA	NA
DOE Order 5820.2A, *Radioactive Waste Management*	No	No	Yes
6 CCR 1007-14, *Colorado Low Level Waste*	Yes	No	No
Colorado Air Quality Control Emission Standards for Asbestos Regulation 8, *Control of Hazardous Air Pollutants*	Yes	No	No
5 CCR 1001-14, *Ambient Air Quality Standards*	Yes	No	No
5 CCR 1001, *Colorado Air Pollution Regulations*	Yes	No	No
40 CFR 61, Subpart H, *National Emission Standards for Hazardous Air Pollutants*	Yes	No	No
5 CCR 1002-8, *Colorado Basic Standards and Methodologies for Surface Water*	NA	NA	NA
5 CCR 1002-8, *Colorado Basic Standards for Groundwater*	Yes	No	No
5 CCR 1003-1, 40 CFR 141, *Safe Drinking Water Act, Colorado Primary Drinking Water Regulations*	NA	NA	NA
40 CFR 141, *Maximum Contaminant Level Goals*	NA	NA	NA
Solid Waste Disposal Act, Colorado Hazardous Waste Act	Yes	No	No
Toxic Substance Control Act 15 USC 2601 *et seq.* 761.40/761.45, *Labeling* 761.65, *Except for Time Limit* 761.66, *Time Limit* 761.79, *Decontamination* 761.125, *PCB Spill Cleanup*	 Yes Yes NA Yes Yes	 No No NA No No	 No No NA No No

Emission Controls for Particles (5 CCR 1001-1) and *Emissions of Volatile Organic Compounds* (5 CCR 1001-9) may be applicable to soil excavation activities. Fugitive dust emissions controls are appropriate and relevant for the demolition. A list of hazardous air pollutant ARARs associated with this project is included in Attachment B.

5.2 ACTION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

The technology based standards and requirements are utilized when ever applicable or relevant and appropriate, to that specific action, to eliminate as many problem areas as possible. The project will encounter conditions regulated by the chemical specific restrictions identified in section 5.2.1 and Attachment B. The restrictions will be incorporated in this project planning effort and will be assured by following applicable RFETS procedures.

5.2.1 Resource Conservation and Recovery

Requirements governing the identification and characterization of hazardous wastes are defined in RCRA and are applicable to the requirements in the Colorado Hazardous Waste Act (CHWA) (6 CCR 1007-3, 261). The implementation of generator standards (6 CCR 1007-3 262) will be completed utilizing the Waste Stream Residue Identification Characterization (WSRIC) program and Waste Management Procedures. A list of specific RCRA ARARs associated with this project is included in Attachment B. The requirements governing Temporary Units (TUs) are applicable to tanks and containers used for storage and treatment of hazardous remediation wastes generated in conjunction with the D&D of B123. (See 40 CFR §264.553). All tanks and containers will be compatible with the waste and in good condition. Incompatible wastes, if encountered, will be segregated within the units. Secondary containment will be provided, where practicable, when liquid wastes are stored or treated in tanks or containers. Waste characterization will be provided, as appropriate, in accordance with the SAP. Inspections, at a minimum of once a week, will be provided during operations in accordance with the Waste Management Plan. Training for individuals generating and handling hazardous remediation waste will be implemented using the framework identified in the RFETS Part B permit. To close a TU, waste and contaminated soils will be removed, as appropriate.

Remediation wastewaters generated during D&D will be transferred to the Consolidated Water Treatment Facility (CWTF, Building 891) for treatment. Remediation wastewaters that contain listed RCRA hazardous wastes or exhibit a RCRA characteristic will not be subject to compliance with RCRA hazardous waste codes and would not be applicable or relevant and appropriate because the wastewaters are CERCLA remediation wastes being treated in a CERCLA treatment unit. The CWTF will treat the remediation wastewaters to meet applicable surface water quality standards under a National Pollution Discharge Elimination System (NPDES) ARARs framework.

Waste generated at B891 as the result of treatment of a listed remediation wastewater will be assigned the corresponding listed waste code. All wastes generated at B891 will be evaluated for hazardous characteristics.

5.2.2 Toxic Substance Control Act (TSCA)

The Toxic Substance Control Act (TSCA) defines criteria to guide management and disposal of PCBs. Fluorescent light ballast are the only potential source of PCBs identified in Building 123. Light ballast marked "No PCBs" or "PCB Free" will be managed as non-hazardous solid waste and disposed at a sanitary landfill. Ballast marked "PCBs" or not marked and not leaking will be packaged for disposal at an TSCA-permitted facility. Leaking PCB light ballast and unmarked light ballast will be managed as fully-regulated PCB Articles. A list of specific TSCA ARARs associated with this project is included in Attachment B.

5.2.3 Colorado Low Level Waste Program

The State of Colorado Low Level Waste Program (6 CCR 1007-14) is incorporated in Waste Management Operation procedures (1100-1104).

5.3 LOCATION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

No location specific requirements are associated with the scope of work.

5.4 TO-BE-CONSIDERED (TBC)

TBCs are used in determining the necessary level of cleanup for the protection of human health and the environment. The March 8, 1990 preamble to the final National Contingency Plan (NCP) rule (55 FR 8746) indicates that the use of TBCs is discretionary rather than mandatory; however, incorporation of TBCs is recommended and identified in this document.

6.0 IMPLEMENTATION SCHEDULE

The Level 1 schedule for this project is included as Attachment C. To meet requirements of the PAM process, the project will be completed in less than six months from commencement of contractor mobilization.

7.0 REFERENCES

DOE 1992a, *Final Phase I RFI/RI Work Plan for Operable Unit 9, Original Process Waste Lines*, March.

DOE 1992b, *Final Phase I RFI/RI Work Plan for Operable Unit 13, 100 Area*, October.

DOE 1992c, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO.

DOE 1994, *Final Phase I RFI/RI Work Plan for Operable Unit 9, Technical Memorandum No.1, Volume IIA-Pipelines*, November.

DOE 1996a, *Final Rocky Flats Cleanup Agreement*, Rocky Flats Environmental Technology Site, July.

DOE 1996b, *RFETS Ten Year Plan.*

DOE 1997, *Part IX Personnel Training of the Rocky Flats Environmental Technology Site RCRA Permit* .

EPA 1994, *Guidance for the Data Quality Objective Process,* EPA, QA/G-4.

NRC 1997, *NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination,* Draft.

APPENDIX A

RCRA APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Chemical Specific Requirements and Considerations

Regulation 8 Control of Hazardous Air Pollutants

Citation*	Applicable	Relevant and Appropriate	TBC
Regulation 8 Control of Hazardous Air Pollutants (Sections involving with School requirements and State Buildings are not applicable.)	NA	NA	NA
Regulation No. 8 Part B, Part II, *Certification and Training*	No	No	Yes
General Requirements to Obtain a General Abatement Certificate	NA, administrative	NA	NA
Section II, *Initial Training*	No, worker safety issues are covered under OSHA and are not ARARs.	No	Yes
Section III, *Project Requirements*			
III B1, *Notification*	NA, administrative	NA	NA
C, *General Requirements Permits*	NA, administrative	NA	NA
C. 2, *Asbestos Abatement Work Practices*	NA, addressed through health and safety issues with exceptions	NA	NA
C.7.6, *Maximum Allowable Asbestos Levels*	Yes	No	No
C.8.2.b., d, f, *Handling Waste Material*	Yes	No	No
C.4, *Alternative Procedures and Variances*	NA, administrative	NA	NA
III, A(i) *Notice of Asbestos Removal*	NA, administrative	NA	NA
III *Asbestos Spill Response* (except as noted below):	No	No	Yes
III B.1, *Notices-Release triggers*	NA, administrative	NA	NA
III C., *Permit-Release triggers*	No	No	No
29 CFR 1910.134	No	No	No
29 CFR 1926.58, *Asbestos Construction Standard*	No	No	No
EPA Worker Protection Rule	No	No	No

Action Specific Requirements and Considerations

RCRA

Citation*	Applicable	Relevant and Appropriate	TBC
40 CFR 261, *Identification and Listing of Hazardous Waste*	Yes	No	No
40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*			
262.11, *Hazardous Waste Determinations*	Yes	No	No
262.12, *EPA ID Number*	No	No	No
262 Subpart B, *Manifest*	No	No	No
262 Subpart C, *Pre-Transportation Requirement*	Yes	No	No
262.34, *Accumulation Time* (with the following exceptions):	Yes	No	No
90-Day Storage Time Limit	No	No	No
Container Labeling	No	No	Yes
Container Dating	No	No	No
55 Gallon Limit for SAA	No	No	No
262.40 Subpart D, *Recordkeeping and Reporting*	No	No	No
262 Subpart E, *Exports of Hazardous Waste*	NA	NA	NA
262 Subpart F, *Imports of Hazardous Waste*	NA	NA	NA
262 Subpart H, *Transfrontier Shipments*	NA	NA	NA
40 CFR 263, *Standards Applicable to Transports of Hazardous Wastes*			
263.11, *EPA Identification Number* (offsite shipments only)	Yes	No	No
263.12, *Transfer Facility* (offsite shipments only)	Yes	No	No
263 Subpart B, *Manifest System* (offsite shipment only)	Yes	No	No
263 Subpart C, *Hazardous Waste Discharges* (offsite shipments only)	Yes	No	No
40 CFR 264 Subpart S, *Corrective Action for Solid Waste Management Units*	Yes	No	No
264.553 Temporary Units - Containers	Yes, applicable to hazardous remediation waste	No	No
264.553 Temporary Units - Tanks	Yes, applicable to hazardous remediation waste	No	No

Action Specific Requirements and Considerations

RCRA (cont'd)

Citation	Applicable	Relevant and Appropriate	TBC
40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs)*			
265 Subpart A, *General*	No	No	No
265 Subpart B, *General Facility Standards*			
265.11, *Identification Number*	No	No	No
265.12, *Required Notices*	No	No	No
265.13, *General Waste Analysis*	NA	NA	NA
265.14, *Security*	NA	NA	NA
265.15, *General Inspection Requirements*	NA	NA	NA
265.16, *Personnel Training*	Yes, to individuals generating and handling hazardous waste	No	Yes
265.17, *General Requirements for Ignitable, Reactive, or Incompatible Wastes*	Yes	No	Yes
265.18, *Location Standards*	NA	NA	NA
265.19, *Construction Quality Assurance Program*	NA	NA	NA
265 Subpart C, *Preparedness and Prevention*			
265.31, *Maintenance and Operation of Facility*	Yes	No	No
265.32, *Required Equipment*	Yes	No	No
265.33, *Testing and Maintenance of Equipment*	Yes	No	No
265.34, *Access to communications or alarms*	Yes	No	No
265.35, *Required Aisle Space*	Yes	No	No
265.37, *Arrangements with local authorities* (a) (1)-(4)	Yes	No	No
(b)	No	No	No
265 Subpart D, *Contingency Plan and Emergency Procedures*	Yes	No	No
265 Subpart E, *Manifest System* (offsite shipments of hazardous waste)	Yes	No	No
265 Subpart F, *Groundwater Monitoring*	NA	NA	NA

Action Specific Requirements and Considerations

RCRA (cont'd)

Citation	Applicable	Relevant and Appropriate	TBC
265 Subpart G, *Closure and Post-Closure*	NA	NA	NA
265 Subpart I, *Use and Management of Containers* NOTE: Subpart S of 264 may replace this section of requirements.	Yes	No	No
265 Subpart J, *Tanks*, Part of an existing RCRA unit (tanks, sumps, piping and other ancillary equipment will be closed using a separate Closure Plan in accordance with 265 Subpart G. This unit will be closed under the 123 PAM.	NA	NA	NA
265 Subpart K, *Surface Impoundments*	NA	NA	NA
265 Subpart L, *Waste Piles*	NA	NA	NA
265 Subpart N, *Landfills*	NA	NA	NA
265 Subpart O, *Incinerators*	NA	NA	NA
265 Subpart P, *Thermal Treatment*	NA	NA	NA
265 Subpart Q, *Chemical, Physical and Biological Treatment*	NA	NA	NA
265 Subpart R, *Underground Injection*	NA	NA	NA
265 Subpart W, *Drip Pads*	NA	NA	NA
265 Subpart AA, *Air Emission Standards for Process Vents*	NA	NA	NA
265 Subpart BB, *Air Emission for Equipment Leaks*	NA	NA	NA
265 Subpart CC, *Air Emission Standards for Tanks, Surface Impoundments and Containers*	NA	No	No
265 Subpart AA, *Air Emission Standards for Process Vents*	NA	NA	NA
265 Subpart BB, *Air Emission for Equipment Leaks*	NA	NA	NA
265 Subpart CC, *Air Emission Standards for Tanks, Surface Impoundments and Containers*	NA	No	No
265 Subpart DD, *Containment Buildings*	NA	NA	NA
40 CFR 266 Subpart C, *Recyclable Materials Used in a Manner Constituting Disposal*	NA	NA	NA

Action Specific Requirements and Considerations

RCRA (cont'd)

Citation*	Applicable	Relevant and Appropriate	TBC
266 Subpart F, *Recyclable Materials Utilized for Precious Metal Recovery*	NA	NA	NA
266 Subpart G, *Spent Lead Acid Batteries*	Yes	No	No
266 Subpart H, *Hazardous Waste Burned in Boilers and Industrial Furnaces*	NA	NA	NA
40 CFR 268, *Land Disposal Restrictions* (all sections regarding off-site shipment of wastes are applicable except for the following):	Yes	No	No
268.50, *One Year Storage Prohibition*	No	No	No
268.6, *Petitions to Allow Land Disposal of a Prohibited Waste*	No	No	No
268.44, *Variance from a Treatment Standard*	No	No	No
268.7(a)(4), *Waste Analysis Plan for Onsite Treatment*	No	No	No
268.9(a)(4), *One-Time Notifications of Onsite Treatment and Disposal of Characteristic Waste*	No	No	No
268.7(a)(5)(6) *One-Time Notice* (Onsite waste only)	No	No	No
40 CFR 270, *Hazardous Waste Permit*	NA	NA	NA
40 CFR 271, *State Authorization*	NA	NA	NA
40 CFR 273, *Universal Waste Management* (Batteries, pesticides and thermostats only)	Yes	No	No
40 CFR 279, *Used Oil Management Standards*			
279 Subpart C, *Used Oil Generators*	Yes	No	No
279 Subpart D-G	NA	NA	NA
279 Subpart H, *Standards for Used Oil Marketers*	Yes	No	No
279 Subpart I, *Dust Suppressant*	NA	NA	NA
40 CFR 280, *Underground Storage Tanks*	NA	NA	NA

* Federal Requirements are identified except where State requirements are more stringent.

TSCA

Citation	TSCA Requirement	Applicable	Relevant and Appropriate	TBC
Ballast Marked "No PCB" or "PCB Free" (Both leaking and non-leaking)	None	NA	NA	NA
Non-Leaking Ballast Marked "Contains PCBs"	Disposal in a TSCA Incinerator (Small capacitor exclusion)	No	Yes, to final offsite management of this waste stream	Yes
Non-Leaking, Unmarked Ballast	Disposal in a TSCA Incinerator (Guidance from Region VIII)	No	No	Yes
Leaking Ballast Marked "Contains PCBs"	PCB Article 761 et. seq.	Yes	No	No
Leaking, Unmarked Ballast	PCB article fully TSCA regulated including any material that comes into direct contact with the leak	Yes	No	No

APPENDIX B

SUMMARY OF WASTE MANAGEMENT PLAN FOR THE BLDG. 123 D&D PROJECT

Estimated generation volumes incorporated into Building 123's Waste Management Plan (June 1997) may differ from those volumes used in this summary. Variations are due to completion of additional characterization and selection of waste management options.

WASTE STREAM	PACKAGING AND ONSITE STORAGE	FINAL DISPOSITION	ESTIMATED GENERATION VOLUME
ASBESTOS NON-RAD Friable Non-friable	Gray 55 gallon drums or strong tight boxes; friable 6 mm plastic double bagged; crate, roll-off; B666 or outside	Friable, Kettleman Hills through Chem Waste Contract Non-friable- U.S.A. Waste, Erie Co.	Friable 740 cu yds Non-friable <1 cu yd
ASBESTOS RAD Friable Non-friable	White 55 gallon drums or boxes; 6 mm plastic double bagged or strong tight boxes/crates; B664 or B644 Cargo Containers	Nevada Test Site (NTS)	4 cu yds
PCBs NON-RAD ballasts non-leaking	Black and yellow drum with a plastic liner Building 666	Chem Waste contract to Rollins Inc. at Deerpark, Tx.	< 1 cu yd. This sum is a total of all PCB categories. Until the ballasts are removed, it is impossible to categorize this waste stream correctly.
PCBs NON-RAD leaking ballasts and all other regulated PCBs (articles, etc.)	Black and yellow drum with plastic liner; document on traveler if TSCA regulated. Building 666	Chem Waste contract to Rollins Inc. at Deerpark, Tx.	Totaled in PCB NON-RAD category
PCBs RAD ballasts, non-leaking (LLW only, not TSCA regulated)	White drum with a plastic liner B666	Oak Ridge	Totaled in PCB NON-RAD category
Hazardous Waste NON-RAD fluorescent tubes Solvents, Paints, lead, chemicals, metals	Black and white drum tubes crushed on-site 123S or RCRA Unit 1	Chem Waste Contract	<1 cu yd
PCBs RAD Leaking ballasts and all other rad contaminated (LLW) and TSCA regulated wastes	White drum with a plastic liner B666	Oak Ridge	Totaled in PCB NON-RAD category

WASTE STREAM	PACKAGING AND ONSITE STORAGE	FINAL DISPOSITION	ESTIMATED GENERATION VOLUME
Hazardous waste rinsate (rad and non-rad) This waste stream will be generated during RCRA closure of part of RCRA Unit 40.	Process waste system,	Managed onsite in a wastewater treatment unit (building 374)	600 gallons
Mixed Wastes RAD Non-homogeneous Homogeneous	 White 55 gallon drum 904A or Unit 14 or Unit 15A in Building 906	Non homogeneous LLMW does not have a designated disposal site at this time Homogeneous Oak Ridge LLM and LL solvents Envirocare, Utah	25 cu yds Envirocare can take solids and liquids (non-organics) that can be solidified
Low Level Waste plaster, wall materials, windows, panels, cement, etc.	White drum or white boxes or full size wooden crates complying with WO 1100 or WO 4034 B664 Cargo Containers or B440 Cargo Containers	Nevada Test Site	300 cu yds
Sanitary or Industrial Waste NON-RAD	Rolloffs either 20 or 30 yard roll offs	U.S.A. Waste, Erie, Colorado	150 cu yds
PU&D materials and processed RCRA Scrap Metal destined for reclamation NON-RAD	Not regulated under RCRA [file systems, cabinets, shelves, desks, fumes hoods, muffler furnaces, lab benches, etc.]	Per PU&D; or Per RF contract	500 cu yds
Processed RCRA Scrap Metal destined for reclamation RAD	White box and/or container	No contract yet in place. Options include SEG and MSC. No shipments will be made until a contract is in place with a K-H approved vendor.	Characterization not complete, estimate unavailable.

In the event a waste stream, not identified in this summary, is generated by this project and this wastes stream has the potential of impacting human health or the environment, then RMRS or its subcontractor is required to immediately notify Kaiser-Hill's Environmental Management and Compliance Division of the existence of this wastes stream. Jointly RMRS and Kaiser-Hill will determine the most appropriate management and disposal options for this

waste stream.

ATTACHMENT 1

DRAFT INTERAGENCY MULTI-AGENCY RADIOLOGICAL SITE SURVEY AND SITE INVESTIGATION MANUAL (MARSSIM) AND DRAFT NUCLEAR REGULATORY COMMISSION (NRC) NUREG/CR-5849, *MANUAL FOR CONDUCTING RADIOLOGICAL SURVEYS IN SUPPORT OF LICENSE TERMINATION*

ATTACHMENT 2

LEVEL 1 SCHEDULE
FOR
THE DECONTAMINATION AND DECOMMISSIONING
OF
BUILDING 123